

**Final Report of the  
National Conference on Weights and Measures  
Task Force on Safety**

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## ATTACHMENTS

- Attachment A: Northeastern Weights and Measures Association (NEWMA) Questionnaire and Summary of Results, August 1988
- Attachment B: Letter from Fred Gerck to members of the Task Force
- Attachment C: Survey from Task Force member, L.F. Eason to Laboratory Metrologists, September 1989
- Attachment D: Memorandum from NCWM Task Force on Safety to NCWM Member Directors, February 1990
- Attachment E: Letter from Task Force to Mr. Alphonse Abadir, Occupational Safety and Health Administration (OSHA), October 26, 1990
- Attachment F: Letter from Task Force to Mr. Alphonse Abadir, OSHA, February 5, 1991
- Attachment G: Letter to Ms. Joan Mindte, National Institute of Standards and Technology (NIST), from Mr. Thomas J. Shepich, OSHA, March 29, 1991
- Attachment H: Memorandum from Task Force member, L.F. Eason, NC, to Georgia Harris, NIST
- Attachment I: Proposed "Safety Considerations" section; sample Examination Procedure Outlines (EPO's) (Numbers 1-E, 13, and 21) with safety reminders; and "Glossary of Safety Key Phrases" for NCWM Publication 12

## I) Summary

This document is the final report of the National Conference on Weights and Measures (NCWM) Task Force on Safety. This report details the activities and accomplishments of the Task Force and includes recommendations to the NCWM Executive Committee on the issue of safety in the weights and measures workplace. The intent of this report is to provide a detailed account of the work of the Task Force and to emphasize to agencies in the weights and measures community the importance of establishing and maintaining an effective safety program. The primary objectives of the Task Force in writing this report are:

- (1) to raise the level of safety consciousness in the weights and measures community; and
- (2) to encourage agencies in the weights and measures community to establish and maintain a safe working environment for their employees.

In the course of its work, the Task Force realized that it would be impractical to develop a "model" safety program to be used by the weights and measures community. Equipment in the weights and measures community varies from agency to agency and even within an agency; environmental factors present in the workplace vary from location to location; and local and State safety requirements vary from area to area. The recommendation of a model program could even have potentially dangerous consequences; an agency might overlook a safety hazard present in its area that was not specifically addressed in the model program, or the agency might violate a local or departmental safety requirement by following the model program.

This report provides suggestions of guidelines to be considered when developing safety policies and procedures and is presented in a format intended to assist an agency in developing a new safety program or in maintaining a current program. An agency must evaluate the safety hazards which are created by the unique combinations of equipment, procedures, and environmental factors present in its own workplace, and it must develop a safety program which is tailored to meet its individual needs and any applicable local and State safety requirements. *It is absolutely essential that the agency work closely with the local or State Occupational Safety and Health Administration (OSHA) official or departmental safety officer when developing a safety program to insure that all potential safety hazards have been adequately addressed.*

### **Background**

In 1988 the Northeastern Weights and Measures Association (NEWMA) established a Task Force on Safety to address the concerns of its members about safety in the weights and measures workplace. The results of a questionnaire distributed by the NEWMA Task Force to weights and measures officials across the United States indicated a growing concern about this issue and resulted in a number of questions about the safety practices currently in place in many jurisdictions (see Attachment A). NEWMA presented these concerns to the Executive Committee of the NCWM and requested that the issue be studied on a national level. Consequently, an NCWM Task Force on Safety was established in August 1989 by the NCWM chairman at that time, Fred Gerk (see Attachment B). It was charged with the task of studying the issue of safety in the weights and measures environment and making recommendations to the NCWM concerning ways in which this issue might be addressed by the weights and measures community as a whole.

### **The Work of the Task Force**

The NCWM Task Force on Safety held a total of four meetings: January 1990, April 1990, November 1990, and April 1991. The Task Force identified its primary tasks as follows:

- (1) Establish a library of safety information.
- (2) Update each Examination Procedure Outline (EPO) found in NCWM Publication 12 (EPO's for Weighing and Measuring Devices) to include basic safety information.
- (3) Make additions to National Institute of Standards and Technology (NIST) Handbook 143, State Weights and Measures Laboratories Program, and to NIST Handbook 145, Handbook for the Quality Assurance of Metrological Measurements, to include safety information for the metrology laboratories.
- (4) Incorporate safety information into the training modules of the National Training Program (NTP).
- (5) Promote the establishment of a NCWM Subcommittee on Safety to continue the work of the Task Force, and encourage similar subcommittees at the regional level;
- (6) Assist the NCWM Committee on Education, Administration, and Consumer Affairs (the Education Committee) in developing a chapter on safety for the National Training Program (NTP) Module on Weights and Measures Administration.
- (7) Develop a document for NCWM publication detailing the work and recommendations of the Task Force.

The Task Force recognized that safety in the weights and measures workplace can be a complex issue due to the number of potential safety hazards to which weights and measures officials, laboratory metrologists, and servicepersons are exposed on a routine basis. Weighing and measuring equipment is varied in design and its operation can introduce potential safety hazards into the working environment. In addition, the many different environments in which the equipment is located can require the inspector or serviceperson to be exposed to potential safety hazards such as chemicals in a chemical plant; slick, wet surfaces in a slaughterhouse; petroleum fumes in a bulk petroleum terminal; overhead obstructions in a grain elevator; and a variety of other conditions.

In the course of its work, the Task Force found that many NCWM members have long had well-established safety programs while many others have few or no recognized safety policies in place. The Task Force's recommendations to the NCWM are designed to be useful to jurisdictions with safety programs at all levels; the recommendations provide suggestions for developing and maintaining existing programs as well as information on how to establish a new safety program. The Task Force recognizes **any** effort to establish a safety program or to implement a safety policy as a worthwhile endeavor; such actions are a good start in working toward the establishment of an effective, well-developed safety program and the maintenance of a safe working environment. The Task Force encourages all agencies in the weights and measures community to address the issue of safety in the workplace as a priority issue to insure the continued safety and health of their employees and those around them.

The Task Force recognized that it would need to gather as much information as possible about safety in the weights and measures workplace in order to learn more about the safety practices currently used in the weights and measures community. Task Force member L.F. Eason distributed a survey to all laboratory metrologists, requesting information concerning safety in the metrology laboratory

environment (see Attachment C). A memorandum was distributed by the Task Force to all NCWM Member Directors to request information pertaining to safety in the weights and measures workplace (see Attachment D). In an effort to share the information obtained from many weights and measures officials and industry members, the Task Force organized the information into a library of safety information which will be made available to members of the NCWM.

The Task Force identified the tasks numbered (2) and (3) above as its primary objectives. NCWM Publication 12 and NIST Handbooks 143 and 145 are used by a majority of weights and measures officials and servicepersons across the United States; consequently, the Task Force decided that these documents would provide a means to: emphasize the importance of safety to as many members of the weights and measures community as possible; provide information about potential safety hazards and sources of safety information; and provide reminders to the inspector, metrologist, or serviceperson to follow safe work practices as part of their daily routine. With the assistance of representatives from OSHA (see Attachments E,F, and G) and Ms. Georgia Harris, NIST, the Task Force developed proposed additions and revisions to Publication 12 and Handbooks 143 and 145 (see Attachments H and I). The Task Force is recommending the adoption and use of this material by NCWM members.

The Task Force met with the Education Committee to discuss the addition of safety information to the training modules in the NTP. The Task Force and the Education Committee agreed that the training modules can provide an excellent forum for educating weights and measures officials and servicepersons about potential safety hazards associated with various weights and measures inspection activities. The Education Committee agreed to review the proposed additions of safety information to NCWM Publication 12 and to incorporate the revised versions of the EPO's into the appropriate module as each module is updated; the Task Force hopes this will encourage the use of the safety reminders by weights and measures officials and servicepersons. The Education Committee also agreed to consider the addition of a chapter on safety to each module; this should emphasize the importance of safety in the weights and measures workplace, and the discussions on a module's safety chapter during a training session may help to educate inspectors and servicepersons about the potential hazards involved with a particular inspection and test.

The Task Force discussed the merits of adding language to NIST Handbook 44, Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices, to emphasize the importance of safety during routine inspections of weighing and measuring equipment. The Task Force decided to suggest as part of its recommendations to the NCWM that language be added to Handbook 44 to highlight the importance of designing, installing, and maintaining a device in accordance with Federal, State, and local safety requirements. The Task Force also recognized that language should be added to stress the need for the inspector or serviceperson to adhere to all safety requirements in effect at an inspection site. The Task Force developed suggested language to be added to Handbook 44 for the consideration of the NCWM Specifications and Tolerances Committee.

## **Establishing a Safety Program**

In the course of its work, the Task Force identified many reasons for establishing a safety program, and it recognized that almost every organization can benefit from such a program. The benefits that were identified include:

- Improved employee health, moral, and well-being;
- Improved employee attitude and enthusiasm;
- Decrease in work-related injury and illness;
- Decrease in the amount of sick-leave paid to employees;
- Decrease in health care costs for injured employees;
- Decrease in insurance claims for work-related injuries;
- Decrease in insurance premiums;
- Decrease in employee absence due to work-related injury or illness;
- Decrease in the costs for damaged equipment or property;
- Increase in production time;
- Increase in efficiency and productivity;
- Increase in the discovery and resolution of safety hazards before injury or damage occurs.

The employer and the employee share in the responsibilities necessary for maintaining an effective program once it is established. Among the responsibilities of the employer and the employee are: demonstrating a personal commitment to maintaining a safe working environment; mandating and maintaining better working conditions; making available and properly using resources; encouraging everyone to participate in the program; maintaining open channels of communication; using and implementing a good reporting system; and balancing productivity and safety.

Once the decision to establish a safety program has been reached, an agency must proceed to carefully tailor a program suited to the specific needs of the agency. In a March 29, 1991, letter to the Task Force, OSHA offered suggestions in four main areas to consider when establishing a safety program. The Task Force was able to expand the four main areas identified by OSHA into a set of guidelines which might be helpful to an agency in establishing a safety program. The following include suggested ways for establishing and/or maintaining a safety program.

(1) Appoint a safety officer.

This person should act as a focal point for overseeing the safety program for the agency. This person should be given the responsibility and authority for organizing, managing, and maintaining the safety program; establishing and monitoring safety policies; working with any internal or external safety committees; interfacing with local and State safety officials; organizing and monitoring the results of regular inspections; selecting and organizing employee safety training; making policy decisions relative to safety issues; and other tasks associated with maintaining an effective safety program.

(2) Conduct a job hazard analysis.

- a) Collect information on current practices;
- b) Review the procedures and identify potential safety hazards; and
- c) Collect related safety information.

(3) Determine what safety and health training is needed.

Schedule safety and health training on a regular basis for all employees. Employees should also be provided with adequate training for performing routine activities.

- (4) Determine the control (administrative, engineering, and personal protective) method needed.
  - a) Select the control method required to minimize or eliminate safety hazards;
  - b) Purchase equipment if needed;
  - c) Modify current equipment if needed; and
  - d) Train employees to properly and safely use equipment.
- (5) Provide a written safety and health program to all employees.
- (6) Communicate Safety Information to Employees.
  - a) Provide written communication;
  - b) Hold regular safety meetings;
  - c) Motivate people to participate;
  - d) Establish safety committees;
  - e) Obtain and post current Material Safety Data Sheets; and
  - f) Obtain information from outside agencies.

Even the most well-developed safety program must be continually evaluated and monitored; safety procedures and policies are of little use if they do not adequately address the safety hazards actually present in the workplace or if they are not being followed. An evaluation of a program can help to identify:

- (1) safety hazards that have not been previously addressed;
- (2) which safety procedures are not being followed;
- (3) which personnel are not following safety procedures; and
- (4) which safety procedures are impractical or ineffective.

Based on these observations, modifications can be made, if needed, to policies or procedures to insure that the safety program is effective in helping to maintain a safe work environment.

### **Information Resources**

In the course of its work, the Task Force recognized that there are many resources available for safety training or safety information which can help to maintain an effective safety program. These resources can be in the form of training to insure that proper safety procedures are known and followed or in the form of information about a product or test procedure which may prevent potential injury to an employee. In a separate section of this report is a list of some of the many resources which can provide safety training or safety information. This is not intended to be a complete list of all possible resources for safety information, rather this is a list of some of the agencies that the Task Force has worked with or obtained information from in the course of its work.

### **Conclusions**

All agencies in the weights and measures community are urged to make safety a priority issue. The Task Force encourages members of the weights and measures community to work with their local or State OSHA official to develop and implement a safety program which is tailored to meet the specific needs of their agency and all local and State safety requirements. The Task Force presents its recommendations to the NCWM in the next section of this report with the hopes that its work will serve to increase the awareness of safety in the weights and measures community.

## II) **Recommendations to the National Conference on Weights and Measures (NCWM)**

The NCWM Task Force on Safety presents the following recommendations to the Executive Committee of the NCWM.

- 1) **Establish a Subcommittee of the Committee on Education, Administration, and Consumer Affairs (the Education Committee) to address safety in the weights and measures workplace, thereby reaffirming the commitment of the NCWM to safety in this arena. Such a Subcommittee should include representation of all segments of the NCWM including the Associate Membership, the Metrologist's Group, and the general membership of the NCWM.**

While the Executive Committee will be responsible for determining the specific structure and duties of the Safety Subcommittee, the Task Force has identified several basic areas of responsibility with which the Subcommittee should be charged:

- (a) The primary responsibility of the Subcommittee should be to address any questions pertaining to safety in the weights and measures workplace, including field, laboratory, and office environments;
- (b) Additional responsibilities should include:
  - Expanding upon the approach used in the revisions of the Examination Procedure Outlines and extending the approach to other types of routine weights and measures activities such as package checking;
  - Updating and sharing information pertaining to safety in the weights and measures workplace (format to be used might include a biannual safety newsletter or a regular section in the National Institute of Standards and Technology, Office of Weights and Measures newsletter, Weights and Measures Today);
  - Providing a listing of information available in the safety library established by the Task Force;
  - Providing the NCWM and regional weights and measures associations with a report of any activities or issues pertaining to safety that are identified during the year, including a list of safety training seminars and materials;
  - Assisting the Education Committee as requested in revising the National Training Program (NTP) training modules to include safety information;
  - Assisting the Metrologist's Group as requested in revisions to laboratory documents to include safety information;
  - Identifying sections of NCWM documents that should be revised to include safety information, and taking steps to encourage revision of these documents (this would necessitate regular review of the recommendations of the other standing committees to revise or add to existing NCWM documents -- e.g., other NCWM committees' annual and interim reports); and
  - Maintaining the working relationship between OSHA and the NCWM.

The Task Force also emphasizes that the Subcommittee should not be expected to provide analyses of individual safety programs, and that it should only meet as needed.

- 2) **Request that the Education Committee include the recommended safety revisions to the EPO's, the "Safety Considerations" section, and the "Glossary of Safety Key Phrases" in the next publication of NCWM Publication 12, and encourage NCWM members to follow the revised versions of the EPO's.**
- 3) **Encourage NCWM members to follow the safety recommendations that will be added to or issued as addendums to NIST Handbook 143, State Weights and Measures Laboratories Program Handbook, and to NIST Handbook 145, Handbook for the Quality Assurance of Metrological Measurements.**
- 4) **Encourage the Education Committee to include at least a chapter in each National Training Program (NTP) Training Module to address safety precautions.**
- 5) **Request that the NCWM Specifications and Tolerances Committee recommend the addition of a section pertaining to safety to the General Code of NIST Handbook 44 (and to any other codes deemed appropriate by the S & T Committee), and request that the various sectors of the Technical Committee on National Type Evaluation revise the checklists of NCWM Publication 14 as appropriate to reflect this change to Handbook 44.**

The Task Force recommends consideration of the following language for inclusion in HB 44 as an additional section and/or incorporation into existing sections of the **General Code**:

**Specifications Section:**

G-S.X. Safe Design Principles

A device shall be designed, manufactured, constructed, and marked in accordance with applicable Federal, State, or local safety requirements and trade or industry standards of safety.

**Notes Section:**

G-N.X. Safe Inspection Practices

Inspection and testing shall be conducted:

- (a) Using safe work practices, equipment, and procedures; and
- (b) In conformance with Federal, State, and local safety laws and regulations and with the safety policies in effect at the inspection site.

If a violation of the safety provisions of this code occurs or a hazardous condition occurs in the work environment, inspections and tests shall be suspended and the equipment under test placed in an unapproved status until the violation or hazardous condition has been corrected.

**User Requirements Section:**

G-UR.X. Safe Installation, Maintenance, and Use Practices

- (a) Devices shall be installed in accordance with Federal, State, and local safety laws and regulations; applicable trade or industry safety standards or recommendations; and all safety warnings or procedures specified by the manufacturer.
  - (b) Devices shall be maintained (i.e., marking and warning labels, safety mechanisms, and environment) in accordance with the provisions specified in (a).
  - (c) Devices shall be operated or used in conformance with the instructions or markings provided by the manufacturer and used only when all safety appliances are operational.
- 6) Encourage the regional weights and measures associations to establish regional safety committees and to promote the presentation of safety training seminars at regional weights and measures conferences.**
- 7) Disband the Task Force as of July 1991.**

### III) Background -- The Establishment of the NCWM Task Force on Safety

Prior to the establishment of the National Conference on Weights and Measures (NCWM) Task Force on Safety in 1989, a number of weights and measures administrators in the Northeastern Weights and Measures Association (NEWMA) were receiving inquiries from inspectors in their jurisdictions about safety practices for various routine weights and measures activities. The most prevalent inquiry related to inspections that involve working around hazardous materials such as petroleum products and other chemicals. NEWMA administrators determined that a safety task force should be established and a study should be made to determine the status of safety programs and practices in the weights and measures community. Such a study would enable NEWMA to determine the need for more information on safety in the weights and measures community and whether or not a recommendation should be made to the NCWM to address safety on a national basis.

NEWMA's Task Force on Safety distributed a questionnaire pertaining to safety in the weights and measures workplace to weights and measures officials across the United States (see Attachment A). The results of this questionnaire indicated that a number of jurisdictions have excellent safety programs already in place with well established safety practices and procedures; however, many other jurisdictions have few or no policies to address safety concerns associated with routine weights and measures activities. The questionnaire initiated many phone calls and letters to the chairman of NEWMA's Task Force on Safety.

NEWMA's questionnaire indicated that many weights and measures inspectors were beginning to question whether or not adequate safety precautions were being taken during routine weights and measures inspection activities. A number of inspectors were particularly concerned over exposure to petroleum and other hazardous materials during the course of routine inspections. Also of concern to inspectors were other hazards associated with weights and measures inspections such as the following:

- "projectiles" in the form of improperly secured inspection equipment in vehicles;
- lack of training for defensive driving;
- lack of training for and attention to proper lifting techniques;
- unsafe existing equipment;
- a lack of information exchange; and
- a lack of general training in safety techniques.

When the findings of the NEWMA Task Force on Safety were presented to NEWMA, the members of NEWMA determined that the issue should be forwarded to the NCWM for study on a national level. NEWMA recognized safety as an area that could be better addressed, and in a more standardized fashion, by the weights and measures community as a whole.

The NCWM Task Force on Safety was formally established in August 1989 by then NCWM Chairman Fred Gerk in response to requests that had been made by NCWM members who were becoming increasingly concerned over the issue of safety in the weights and measures workplace. The following NCWM members were appointed to serve on the Task Force:

Charles A. Gardner, Suffolk County Consumer Affairs, Weights and Measures, NY, Chairman  
L.F. Eason, North Carolina Department of Agriculture, Standards Division;  
James D. Harnett, Orange County California Department of Weights and Measures;  
Jean Johnson, American Petroleum Institute (later replaced by Earl (Hap) Thompson, API)  
Donald J. Soberg, Admin. Trade and Consumer Protection, Wisconsin Dept of Agriculture

Mr. Gerk reviewed the objectives behind the establishment of the Task Force in a letter to Task Force chairman, Charles Gardner dated August 7, 1989 (see Attachment B). A similar letter was distributed to the other members of the Task Force. The primary responsibilities charged to the Task Force were to study the issue of safety in the weights and measures workplace and to make recommendations to the NCWM concerning how the weights and measures community might better address the issue of safety in the everyday work environment. Members of the Task Force began preliminary work in September 1989 using information and recommendations pertaining to safety in the weights and measures workplace that were contributed to Task Force members by many individual weights and measures jurisdictions. Task Force Chairman, Charles Gardner, Suffolk County Consumer Affairs, New York, distributed this information to the Task Force members for independent review and comment. Task Force member, L.F. Eason, North Carolina Department of Agriculture, Standards Division, distributed a survey to all laboratory metrologists requesting information about safety problems encountered in the laboratory environment and the solutions used in addressing these problems (see Attachment C). The Task Force held its first formal meeting in January 1990.

#### IV) **The NCWM Task Force on Safety**

##### **January 1990**

The NCWM Task Force on Safety held its first meeting during the NCWM Interim Meetings in January 1990 in Scottsdale, Arizona. At that meeting the Task Force established its objectives and identified specific tasks to be accomplished by the group.

The Task Force identified its primary objectives as follows:

- 1) Update each Examination Procedure Outline (EPO) found in NCWM Publication 12 (EPO's for Weighing and Measuring Devices) to include basic safety information.
- 2) Incorporate safety information into the training modules of the National Training Program (NTP).
- 3) Make additions to National Institute of Standards and Technology (NIST) Handbook 145, Handbook for the Quality Assurance of Metrological Measurements, to include safety information for the metrology laboratories.
- 4) Establish a library of safety information.
- 5) Promote the establishment of a NCWM Subcommittee on Safety to continue the work of the Task Force, and encourage similar subcommittees at the regional level.
- 6) Develop a separate publication detailing the work of the Task Force upon completion of its work.

The Task Force also met with the NCWM Liaison, Education, and Executive Committees to present its goals and to request appropriate support from each Committee.

The Task Force recognized safety in the work place as an important issue which affects everyone, but especially those individuals who handle heavy weights and equipment on a routine basis. The weights and measures field inspector and the laboratory metrologist are routinely exposed to potential safety hazards; these hazards are present in the equipment they use, the products with which they work, and the locations in which they work. The Task Force believes that only through recognition of these potential hazards and the establishment of good safety practices can dangerous situations be avoided.

The Task Force acknowledged that, while a number of weights and measures jurisdictions have safety programs already in place, many other jurisdictions have few or no established safety policies or procedures. The Task Force recognized that the establishment of a safety program in a jurisdiction with no safety program already in place can seem overwhelming in terms of time and staff; by accomplishing the objectives outlined above, the Task Force hoped to help lessen the chore of incorporating safety practices into all phases of weights and measures activities.

##### **The First Priority -- EPO's**

The Task Force recognized that a step-by-step approach would be the most effective means to insure the promotion of safety awareness in routine weights and measures activities. Training modules are often presented only to inspectors who are just beginning to learn about a particular testing activity and not to those inspectors who have actively performed that type of testing for a long period of time. Because the issue of safety should reach all inspectors, not just beginners to a test procedure, the Task Force targeted the EPO's as its first priority in getting safety information out to the various States.

Almost every weights and measures inspector has access to and regularly makes use of the Examination Procedure Outlines (EPO's) found in NCWM Publication 12. Similarly, laboratory metrologists make frequent use and reference to the Standard Operating Procedures (SOP's), Good Laboratory Practices (GLP's), and Good Measurement Practices (GMP's) found in NIST Handbook 145. By incorporating safety information into the EPO's and equivalent procedures in HB 145, the Task Force hoped to be able to reach both lab and field personnel and to raise the level of safety consciousness in the routine of everyday weights and measures activities.

Task Force members were asked to review the EPO's in NCWM Publication 12 prior to their next meeting to identify various safety considerations that should be incorporated into each EPO. The Task Force would then review the work done by each member and summarize the safety information to be included in each EPO. The Task Force's objective was to list, at the beginning of each EPO, potential safety hazards identified by key phrases such as "electrical hazards", "location of testing", or "toxic substances." These key phrases would serve to warn the inspector prior to beginning an inspection of the potential safety hazards involved and of the preventative measures that could be taken. The Task Force also planned to incorporate safety information into the body of the EPO when a particular aspect of safety had to be emphasized. For example, in the EPO for testing LPG meters, the need for protective gloves would be noted by use of a key phrase at the beginning of the EPO and emphasized again in the body of the EPO at the point that the inspector would begin to set up the testing equipment.

The Task Force planned the development of a glossary containing the key phrases used at the beginning of each EPO. The glossary would be an appendix to Publication 12 and would define and elaborate on each key phrase and give examples of the potential safety hazards implied by each term. For example, the glossary might include the following as part of the introduction:

"This glossary defines the key phrases which are used at the beginning of each EPO to identify potential safety hazards. Following each key phrase is a brief list of the most common hazards associated with that particular category of safety risk; the inspector is reminded that other associated hazards may exist and should be considered for each individual device and installation. Inspectors should follow those safety procedures established by their jurisdiction, including use of protective clothing and equipment. In all examination procedures, care should be taken to minimize safety risks and to remove potential safety hazards before the inspection begins.

Key phrases such as those listed below would be included in the glossary:

**"electrical hazards"**

improper maintenance of equipment such as:

- worn or faulty electrical cords
- faulty electrical outlets
- too many extension cords
- exposed or loose electrical wiring or circuitry, especially when sealing the device
- scale not designed for wet environments being used in an area frequently exposed to water or used to weigh wet products.

## **"location of testing"**

grain mills or elevators:

- inhalation of airborne grain dust -- use of dust masks
- overhead bins -- use of hard hats
- slick floor surfaces due to dust -- proper footwear with adequate traction and protection from falling objects; caution when moving about facility

chemical plants:

- check with plant manager to determine products to which you will be exposed and what precautions must be taken
- exposure to chemicals and caustic materials -- proper protective clothing and equipment such as coveralls, respirators, gloves, eye protection, protective shoes

slaughterhouse/meat packing facility:

- slick, wet surfaces -- proper footwear with adequate traction and protection from falling objects; caution when moving about facility
- hanging meat hooks with sharp prongs -- protective headgear and eye protection, caution when moving about facility..."

The Task Force felt that an approach similar to that described for the EPO's could be used in NIST Handbook 145; consequently, it planned to request assistance from NIST in incorporating safety information into the Standard Operating Procedures, Good Laboratory Practices, and Good Measurement Practices of NIST Handbook 145 prior to its next meeting.

## **Training Modules**

While meeting with the NCWM Education Committee, the Task Force suggested incorporating safety information into the modules of the NCWM's National Training Program (NTP) as each is updated and revised. The Education Committee responded favorably and agreed to assist the Task Force in this area by reviewing any suggested changes and additions to the EPO's and training modules.

The Task Force specifically requested that the Education Committee:

- 1) Incorporate the revised EPO's into appropriate training modules as each module is revised.

Upon completion of its review of the EPO's, the Task Force will provide members of the Education Committee with copies for their review and input. Once agreement has been reached concerning the revisions made to each, the Task Force will request that the EPO be incorporated into the next revision of the appropriate training module.

- 2) Include additional and detailed safety information in training modules as they are revised at the discretion of the Education Committee.

The Task Force believes that training modules should expand specific safety issues to review potential hazards and preventative measures in each module. A separate chapter on safety (such as is currently found in Module 21, LPG Liquid-Measuring Devices) is most desirable to emphasize the importance of safety awareness as a routine part of inspection.

- 3) Provide copies of revised EPO's to instructors and students participating in the presentation of a module which has not been revised to include extensive safety information. This will insure that safety information is included in the instruction of the module until such time that the module is scheduled for revision.
- 4) Include in the NTP's current library of audiovisual materials (which are available to the State and local jurisdictions for training) any available audiovisual materials concerning safety.

The Task Force had already identified some available audiovisual materials concerning safety which could be provided to the Education Committee for inclusion in their audiovisual library. It was anticipated that additional sources of material would be identified as the Task Force developed its safety library. The Task Force proposed to prepare a list of information concerning sources of this material and provide it to the Education Committee for review. The list might be used for purchasing or simply to serve as a source of information for additional audiovisual materials for inquiries received by the Education Committee.

### **Safety Library**

A great deal of information about safety in the workplace has been gathered by Task Force members and a great deal more information is available from sources such as the American Petroleum Institute, the National Propane Gas Association (NPGA), Occupational Safety and Health Administration (OSHA), Consumer Product Safety Commission (CPSC), and industry groups. The Task Force agreed that it would not make formal recommendations concerning safety to the NCWM until its work had been completed; however, it acknowledged that the information which was being gathered should be made easily accessible to weights and measures jurisdictions.

The Task Force believed that this information might be useful to weights and measures jurisdictions in establishing their own safety programs and could assist the weights and measures community in developing safe work habits. Although not expert in the area of safety, the Task Force believed that it could assist jurisdictions in obtaining the information needed to implement safety practices in many of the routine activities of a weights and measures jurisdiction. By categorizing the information that is available and making it accessible to jurisdictions along with a list of expert contacts, the Task Force hoped to ease the burden of beginning a safety program from scratch as well as to provide an additional source of information for those jurisdictions with safety programs already in place.

The Task Force planned to organize the information which had been gathered into a "library" of safety information. The Task Force agreed that a list of the information could be developed as the material was collected and could contain the title, a brief summary, the source, and the number of pages of each piece of information. The list was to be divided into main subject categories (e.g., Safety Equipment and Clothing) with subcategories (e.g., Gasoline). A preliminary list of categories was identified as follows:

- I) Safety Philosophies and Good Work Practices
- II) Safety Programs Already in Place
- III) Safety Training and Education
- IV) Safety Gear and Clothing
- V) Suitability of Vehicles for Weights and Measures Functions

- VI) Results of Tests To Establish Exposure Levels to Toxic Substances
- VII) Adaptation of Weights and Measures Equipment to Reduce Safety Risks
- VIII) Accidents During Weights and Measures Testing
- IX) Changes to Policies and Procedures to Address Safety Concerns
- X) Actions Taken by Federal, State, or Local OSHA Groups Relating to Weights and Measures Activities
- XI) Miscellaneous Safety Information

The Task Force planned to review the listing of information at its next meeting to determine if any revisions to the list of categories was required and to continue to develop the safety library as it proceeded with its work. The Task Force agreed that the safety library should be maintained at NIST by the NIST technical advisor to the Task Force. The Task Force decided that a listing of information in the safety library should be distributed to NCWM members along with instructions on how to obtain the information when the list was further developed and the information catalogued.

The Task Force planned to continue to search for and gather information which might assist weights and measures jurisdictions in the area of safety. A memorandum dated February 28, 1990 was distributed to all NCWM Member Directors to request copies of any safety information that they might provide to the Task Force (see Attachment D). Members of the Task Force contacted the chairman or president of each regional weights and measures association and requested that he or she inform the association's members of the work of the Task Force and of the Task Force's search for information pertaining to weights and measures workplace safety. Task Force members attending these regional conferences were also to encourage members to submit information to the Task Force. An article was to be submitted for inclusion in the NCWM newsletter, W&M Today, to request NCWM members to forward any information which they might be able to provide to the Task Force. The Task Force also recognized the importance of obtaining information about means that inspectors have devised to address a particular safety concern in their everyday activity and about accidents which have occurred; issues such as these serve to provide examples of how some jurisdictions have responded to hazardous situations.

### **Safety Subcommittee**

The Task Force discussed various means that might be used to insure that the issue of safety would be carried on even after the Task Force was disbanded. It was hoped that the importance of safety would continue to be emphasized by the NCWM. The Task Force recognized that a mechanism must be provided by which members would continue to be made aware of areas of safety concern, ways to improve safety practices, and means by which to obtain information about a specific area of safety.

It was initially suggested that a person be designated at NIST to receive inquiries and to provide assistance to Conference members in resolving safety concerns after the Task Force was disbanded. After discussion with the other Committees, it was determined that a more effective approach might be to establish an NCWM standing committee or subcommittee. Since a standing subcommittee does not have a limited term of existence, it could provide a permanent mechanism by which safety issues and concerns are reviewed by the NCWM on a regular basis. Such a subcommittee would also serve to facilitate the submission of safety issues to the NCWM by providing a forum for Conference members to discuss their questions and concerns about safety in the weights and measures community.

It was suggested that a subcommittee on safety under the Education, Administration, and Consumer Affairs Committee would be most appropriate since training provides an ideal mechanism for conveying the general importance of safety and specific safety precautions for inspection activities. Task Force members agreed that the Task Force should complete its work prior to making specific recommendations to the NCWM concerning the establishment of a separate committee or subcommittee; the Task Force would be more informed and would be in a better position to evaluate the continued needs of NCWM members and to recommend the best way to meet those needs.

### **NCWM Publication on Safety**

The Task Force discussed the various means by which safety information could be disseminated to the members of the NCWM. Inclusion of information in the EPO's, the procedures of Handbook 145, and the NTP Training Modules would provide a means to reach the field inspector and the laboratory metrologist. The library of safety information could be used by NCWM members to gain access to information in specific areas of safety. The Task Force also noted that means must be identified for incorporating safety information into the procedures for other weights and measures activities not covered by the EPO's or Handbook 145 (e.g., package checking, testing of grain moisture meters) and other areas of safety such as in testing equipment (e.g., use of an explosion-proof pump and wiring on an LPG prover).

In addition to the activities described above, which were aimed at disseminating information to specific groups of Conference members, the Task Force felt there should be some source of information that presents an overview of the issue of safety as it applies to the weights and measures community as a whole. The Task Force determined that an effective approach might be to develop a separate NCWM publication that would present an overview of safety problems, discuss current methods for resolving safety concerns that might be associated with weights and measures activities, and indicate means to obtain information and assistance. The Task Force planned to construct this separate publication as it proceeded with its work and to complete the document upon the conclusion of its work.

### **Next Meeting**

The Task Force scheduled its next meeting in April 1990. Prior to this meeting, members of the Task Force agreed to review and summarize any safety information that had been gathered and forward it to the Task Force technical advisor. Members also agreed to study the existing EPO's in NCWM Publication 12 for inclusion of specific safety information.

### **April 1990**

The NCWM Task Force on Safety held its second meeting on April 24-25, 1990, at the National Institute of Standards and Technology in Gaithersburg, Maryland.

### **Examination Procedure Outlines (EPO's), NCWM Publication 12**

The Task Force began its review of the EPO's in Publication 12. For each EPO, the Task Force identified a list of potential safety concerns that should be addressed or considered by the inspector or serviceperson prior to beginning the procedure. After reviewing the EPO's, the Task Force began to identify key phrase that appeared in many of the lists of safety concerns; using these key phrase, the Task Force developed an outline of a glossary of terms to be included in Publication 12.

The Task Force also discussed the inclusion of an introductory section on safety ("Safety Considerations") at the beginning of Publication 12 that would include a discussion of the importance of safety in the weights and measures workplace, a description of how safety reminders are incorporated into the EPO's, and an explanation of how the glossary of key phrases could be used in conjunction with the EPO's to fully understand the safety concerns. Also to be included in the introductory section was a statement cautioning users that policies vary from jurisdiction to jurisdiction; therefore, they must be aware of all safety requirements in effect for the specific conditions of the jurisdiction and test site.

In its discussion of the additions to Publication 12, the Task Force noted that a statement should be included in each EPO and in the "Safety Considerations" section that would remind the user of the importance of using the "Safety Considerations" section, the EPO's, and the glossary together. This statement would encourage the user to include a copy of the "Safety Considerations" section and the glossary of key phrases with any EPO that was copied from Publication 12 for distribution as a single EPO.

Task Force members agreed to continue the review of each EPO at their next meeting. The NIST advisor to the Task Force agreed to develop the ideas discussed by the Task Force and to prepare drafts of the "Safety Considerations" section, the "Glossary of Safety Key Phrases", and samples of the EPO's with safety reminders included; these drafts were to be available to the Task Force members for review at their next meeting.

The Task Force planned to approach the NCWM Liaison Committee to obtain assistance in contacting OSHA to determine whether or not a representative from that organization would be available to assist the Task Force in its work. Since the 1990 annual meeting of the NCWM was to be held in Washington, DC, the Task Force decided to see if a meeting at OSHA's headquarters between Federal OSHA representatives and representatives of the Task Force could be arranged.

#### **Standard Operating Procedures (SOP's), NIST Handbook 143 and Good Laboratory Practices (GLP's), NIST Handbook 145**

The EPO's in Publication 12 are utilized by many weights and measures inspectors; however, the EPO's do not address safety issues in the metrology laboratory. The Task Force decided that the SOP's in NIST Handbook 143 and the GLP's in NIST Handbook 145 might provide a means to incorporate safety considerations into the routine practices of laboratory metrologists. Task Force member, L.F. Eason agreed to approach Georgia Harris, NIST, to determine if an approach similar to that used in the EPO's might be used in Handbooks 143 and 145.

#### **Safety Library**

After the January 1990 meeting of the Task Force, the categories in the safety library were revised and subcategories were developed to better organize the information. Changes were made based on the nature of the information that was forwarded to the Task Force for inclusion in the safety library. The Task Force members reviewed the revised categories and concluded that no additional changes were needed at that time; however, they recognized that revisions might have to be made in the future if they received additional information that did not fall in any of the established categories. The revised categories and subcategories were:

- I) Safety Programs**
- (A) Safety Programs Already in Place **(I/PROG)**
  - (B) Safety Philosophies and Good Work Practices **(I/PRAC)**
  - (C) Changes to Policies and Procedures to Address Safety Concerns **(I/CHNG)**
- II) Actions Taken by Federal, State, or Local OSHA Groups Relating to Weights and Measures Activities**
- (A) General **(II/GENL)**
  - (B) Petroleum and Chemicals **(II/PETR)**
- III) Safety Training and Education**
- (A) General Safety Training/Education Information **(III/GENL)**
  - (B) Lifting Techniques **(III/LIFT)**
  - (C) Proper Use of Safety Gear **(III/GEAR)**
  - (D) Petroleum and Chemical Products **(III/PETR)**
  - (E) Scale Testing **(III/SCAL)**
- IV) Safety Gear and Clothing, Vehicles, and Equipment**
- (A) Safety Gear and Clothing **(IV/GEAR)**
    - (1) General **(IV/GEAR/1)**
    - (2) Petroleum and Chemicals **(IV/GEAR/2)**
    - (3) Scales and Weights **(IV/GEAR/3)**
    - (4) Metrology Laboratory **(IV/GEAR/4)**
  - (B) Suitability of Vehicles for Weights and Measures Activities **(IV/VEHI)**
  - (C) Adaptation of Weights and Measures Equipment to Reduce Safety Risks **(IV/EQUI)**
    - (1) General **(IV/EQUI/1)**
    - (2) Petroleum and Chemicals **(IV/EQUI/2)**
    - (3) Scales and Weights **(IV/EQUI/3)**
- V) Results of Tests to Establish Exposure Levels to Toxic Substances and Other Hazards**
- (A) Petroleum Products **(V/PETR)**
  - (B) Chemicals **(V/CHEM)**
  - (C) Other Hazards -- Scale/Scanner Testing **(V/SCAL)**
- VI) Safety in the Metrology Laboratory**
- (A) General Laboratory Safety **(VI/GENL)**
  - (B) Petroleum and Chemical Products **(VI/PETR)**
  - (C) Weights **(VI/WEIG)**
  - (D) Test Measures **(VI/MEAS)**

**VII) Accidents During Weights and Measures Testing**

- (A) General (VII/GENL)
- (B) Petroleum and Chemical Products (VII/PETR)

**VIII) Miscellaneous Safety Information**

- (A) Surveys (VIII/SURV)
- (B) General Safety Awareness (VIII/GENL)

**IX) Sources of Safety Related Publications and Newsletters**

- (A) General (IX/GENL)
- (B) Petroleum and Chemicals (IX/PETR)
- (C) Scales and Weights (IX/SCAL)
- (D) Metrology Laboratory (IX/LAB)

The Task Force also discussed a number of legal concerns in reference to providing the information in the library to NCWM members. The Task Force members recognized that they were not experts in the field of safety and that it would not be possible for them to adequately review and verify the validity of any of the information collected for inclusion in the safety library. The Task Force also noted that a number of articles it received were copyrighted articles which could not be duplicated without written permission from the author or publishing body. Also discussed was the concern that the information in the safety library may inadvertently exclude the manufacturers of certain equipment or products because such information has not been provided to the Task Force. The Task Force also talked about the costs of maintaining the library and explored the possibility of using another organization to maintain and distribute the information.

**National Training Program Weights and Measures Module on Weights and Measures Administration**

The Task Force discussed a request from the NCWM Education Committee to assist in the development of a chapter on safety in the Module for Weights and Measures Administration. The Task Force reviewed the outline of the module which was provided to the Task Force by the Education Committee. The Task Force agreed that the outline of the chapter on safety closely followed what it visualized for its final report. For example, the Task Force wanted to assist the weights and measures community in addressing the concern of safety in a weights and measures jurisdiction; this would include providing suggestions and guidelines on how to begin the establishment of a safety program. Consequently, the Task Force believed that the Education Committee would be able to use much of the information contained in the final report of the Task Force to develop the chapter.

**Report to the NCWM**

Prior to concluding the meeting, the Task Force prepared an outline of a brief report to be presented to the NCWM Executive Committee at the annual meeting of the NCWM in July 1990. The report detailed the work of the Task Force to date and outlined its future plans. Members of the Task Force agreed that the projected lifespan of the Task Force remained consistent with that projected in January; the Task Force planned to complete its work by July 1991.

## **July 1990**

During the annual meeting of the NCWM, Charlie Gardner, Chairman of the Task Force presented a report of the activities of the Task Force to the NCWM Executive Committee.

At the request of the Task Force, the NCWM Liaison Committee scheduled a meeting with OSHA officials to discuss ways in which OSHA might be willing to assist the Task Force in its study of safety in the weights and measures workplace. Representatives of the Task Force, accompanied by several members of the NCWM Liaison Committee met with Mr. Alphonse Abadir, OSHA, during the NCWM annual meeting. At this meeting, members of the Task Force explained the background of the Task Force and outlined some of the proposed goals of the Task Force. The Task Force representatives inquired whether or not OSHA might be willing to provide assistance to the Task Force in its work, particularly in reviewing the safety information to be added to Publication 12. Mr. Abadir asked that the Task Force forward a request to him in writing that provided additional information about the background of the Task Force and the NCWM, the relationship between NCWM and NIST, and the specific areas in which the Task Force was requesting assistance from OSHA. The written request would enable OSHA to more fully understand the work of the Task Force and would enable a better determination of the assistance that OSHA might be able to provide.

The representatives of the Task Force who attended the meeting with Mr. Abadir were also given the opportunity to tour OSHA's Technical Data Center. The Technical Data Center is a comprehensive source of information pertaining to safety issues and information on the properties of and hazards associated with various products.

A letter dated October 26, 1990, was sent to Mr. Abadir, OSHA, along with several attachments to clarify the request of the Task Force for assistance from OSHA (see Attachment E). Included with the letter were copies of NIST Handbooks 44, 133, and 145; NCWM publications 6 and 12; copies of the summaries of the last two meetings of the Task Force; a short explanation of the background of the Task Force and its relationship to the NCWM and NIST; and a description of the areas in which the Task Force was requesting OSHA's assistance.

## **November 1990**

The Task Force held its third meeting in November 1990 at the National Institute of Standards and Technology in Gaithersburg, Maryland.

In attendance at the meeting was Mr. Earl (Hap) Thompson, API, who was appointed to the Task Force in May 1990. Mr. Thompson replaced Task Force member Jean Johnson, API, who assumed other duties within API not directly associated with the activities of the NCWM. Also attending the meeting in addition to the members of the Task Force were Mr. MacArthur Cheeks, OSHA, and Mr. Roy Demory, Virginia Weights and Measures.

The Task Force continued its review of the safety information to be added to the Publication 12 EPO's. It reviewed samples of several EPO's with safety reminders included and discussed the format and location of the safety reminders. In addition, it carefully reviewed and revised the "Glossary of Safety Key Phrases", and identified additional terms to be included and reviewed the "Safety Considerations" section to be included at the beginning of Publication 12. A number of recommendations were provided by Mr. Cheeks, OSHA, for changes and additions to the information.

The NIST advisor to the Task Force agreed to make the necessary revisions to the EPO's and the accompanying documents and to provide the revised versions to the Task Force for review before the NCWM Interim Meetings. Following the review by the Task Force, the EPO's were to be sent to OSHA with a request that the safety reminders, glossary, and introductory section be reviewed for validity and consistency.

### **Standard Operating Procedures (SOP's), NIST Handbook 143 and Good Laboratory Practices (GLP's), NIST Handbook 145**

Task Force member L.F. Eason provided the group with an update on the progress of additions to NIST Handbooks 143 and 145. Mr. Eason indicated that the revisions were progressing, and that he was working closely with Georgia Harris, NIST, on the proposed changes. He said that a draft of the suggested changes would be available at the next meeting of the Task Force.

Following the Task Force meeting, Mr. Eason worked with Ms. Harris to review possible revisions to the NIST Handbooks.

### **Safety Library**

The Task Force reviewed the listings of information included in the library to date. Little new information had been received since the last meeting of the Task Force.

### **National Training Program Weights and Measures Module on Weights and Measures Administration**

The Task Force briefly discussed the request of the NCWM Education Committee for assistance on the chapter on safety in the Module on Weights and Measures Administration. The Task Force agreed that the format of the final report should closely follow that outlined by the Education Committee for the chapter on safety.

### **Report to the NCWM**

The Task Force prepared a report to be presented to the NCWM Executive Committee in January 1991 at the NCWM Interim Meetings. The Task Force confirmed its plan to recommend the establishment of a permanent committee within the NCWM to address safety issues; it felt that this committee would be most appropriately located within the Education Committee.

The Task Force scheduled its final meeting for April 1991.

### **January 1991**

Task Force chairman, Charles Gardner, reported to the Executive Committee, the Committee on Education and Consumer Affairs, and to the Joint Session during the NCWM Interim Meetings in Bethesda, Maryland. Mr. Gardner reviewed the activities and major accomplishments of the Task Force since the 1990 annual meeting of the NCWM and outlined its future plans. Members of the Executive Committee were provided with draft copies of the "Safety Considerations" section; the "Glossary of Safety Key Phrases;" samples of several draft EPO's which were revised to include safety reminders (EPO's 1-E, 13, and 21); and also with a cover sheet that provided an update of the activities of the Task Force.

## **April 1991**

The Task Force held its fourth and final meeting April 7-8, 1991, at the Marriott Courtyard Hotel in Gaithersburg, Maryland.

Members of the Task Force attending the meeting included Charles Gardner, L.F. Eason, James Harnett, and NIST technical advisors, Tina Butcher and Joan Mindte. In addition to the Task Force members, the meeting was attended by Mr. MacArthur Cheeks, OSHA, and Mr. Roy Demory, Virginia Weights and Measures.

### **Examination Procedure Outlines (EPO's)**

At its November 1990 meeting, the Task Force had requested the NIST technical advisor to make the final revisions to the proposed changes and additions to NCWM Publication 12 and, after getting the Task Force's approval of the final document, to send it to Mr. Alphonse Abadir, OSHA, for review.

A letter dated February 5, 1991, was sent to Mr. Abadir along with a copy of the brief description of the Task Force background and objectives that was sent to OSHA in October 1990; a copy of the "Safety Considerations" section for Publication 12; copies of the EPO's revised with safety reminders; and a copy of the "Glossary of Safety Key Phrases" (see Attachment F). Ms. Joan Mindte, NIST, received a reply to the Task Force's letter from Mr. Thomas J. Shepich, OSHA, dated March 29, 1991, (see Attachment G). In his letter, Mr. Shepich emphasized that the proposed changes to Publication 12 would only be effective if inspectors received training in hazard recognition and controls. Mr. Shepich also recognized the impracticality of providing comments applicable to specific circumstances since weights and measures equipment varies in design, and the safety of its use may be affected by other varying factors in the workplace. This comment supported the general findings of the Task Force that it is not practical to make recommendations that would address the specific safety needs of an individual weights and measures jurisdiction or industry facility. *It is essential that an agency work closely with the local or State OSHA official or departmental safety officer when developing a safety program to insure that all potential safety hazards have been adequately addressed for the unique situation of the agency, to insure that the program meets the specific needs of the agency, and to insure that all local and State safety requirements are met.*

In his letter, Mr. Shepich indicated that OSHA was not able to provide comments applicable to specific circumstances; however, he offered some recommendations for the consideration of NCWM members relative to developing and establishing a safety program:

(a) **Conduct a job hazard analysis**

Information regarding actual job conditions should be used to identify potential hazards.

(b) **Determine what safety and health training is needed.**

As a result of the job hazard analysis, areas where training is necessary for the NCWM inspectors can be identified.

(c) **Determine the control (administrative, engineering, and personal protective) method needed.**

The Material Data Safety Sheets and the job hazard analysis should be helpful in the proper selection of personal protective equipment and reduction of exposure time. If engineering controls are utilized on a site, lesser measures of protective equipment and administrative controls may be needed.

(d) **Provide a written safety and health program.**

An effective method for emphasizing safety and health is to have a written program as exemplified in your document. We recommend that it would be made available to all inspectors for pre-inspection planning.

The Task Force, recognizing that the recommendations offered by OSHA represented the major elements required in the establishment of a safety program for an agency such as a weights and measures jurisdiction, discussed ways in which OSHA's response could be used in its final report. It decided to develop suggested guidelines to be followed when establishing a safety program by expanding each of the four major elements to include suggestions of ways in which each major element could be addressed.

As a result of discussion during the development of the final report, the Task Force identified several modifications and additions to the "Safety Considerations" section, the "Glossary of Safety Key Phrases," and the EPO's. The Task Force determined that the basic philosophies identified in OSHA's letter could be incorporated into the introductory section and glossary of the proposed additions to Publication 12. A new definition for "First-Aid Kit" was added to the glossary and referenced in each EPO. Additional language was added to the definitions of "Eye Protection" and "Material Safety Data Sheets."

The Task Force planned to present the proposed safety revisions for NCWM Publication 12 to the Education Committee at the 1991 Annual Meeting of the NCWM.

The Task Force decided that the "Safety Considerations" section, the "Glossary of Safety Key Phrases," and samples of several revised EPO's would be included as attachments to the final report of the Task Force. The motivation for including these attachments was to give members of the NCWM an opportunity to review the format and content of the proposed revisions.

**Standard Operating Procedures (SOP's), NIST Handbook 143 and Good Laboratory Practices (GLP's), NIST Handbook 145**

Task Force member L.F. Eason provided the Task Force with an update on the status of developing safety revisions to NIST Handbooks 143 and 145. Mr. Eason indicated that he had been working closely with Georgia Harris, NIST, to develop recommended additions and revisions to these two handbooks to include safety information. Since routine revisions to these two Handbooks were not scheduled within the next year, Mr. Eason and Ms. Harris suggested issuing addendums to the Handbooks to highlight the proposed safety revisions and additions.

Mr. Eason gave the Task Force a draft of the suggested revisions and additions that he had developed (see Attachment H). The suggested revisions included a glossary of terms that was similar to the one developed for inclusion in NCWM Publication 12. The Task Force agreed to the suggestion of issuing the changes in the form of addendums to the Handbooks. In this way, the issue of safety in the metrology laboratory could be addressed more quickly. In addition, since the addendums contain only revisions to address safety concerns, they could also serve to call attention to and emphasize the safety considerations.

### **Safety Library**

The Task Force briefly discussed the status of the library of safety information that had been collected during the course of its work. The categories of information contained in the library had not changed since the Task Force last reviewed them, and little additional information had been received. The Task Force discussed ways of making the information available to NCWM members and the resources available for maintaining the library. The Task Force agreed that a list of available information should be provided to members of the NCWM. Later discussions with personnel at NIST indicated that a listing could be distributed to members of the NCWM and requests for information currently in the library could be filled; however, no resources were available for updating and maintaining the library. Since the library was not intended to serve as a source of verifiable reference material and was only intended as a means of sharing the information collected by the Task Force with NCWM members, it was agreed that this should not prove to be a hardship to NCWM members who were interested in accessing safety information. The Task Force decided to include a separate section in its final report that identified sources of current, verifiable information on various safety-related topics.

### **NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices**

In its discussions about ways in which to emphasize the importance of safety in the performance of routine weights and measures activities, the Task Force discussed the possibility of adding safety information to NIST Handbook 44. The Task Force noted that Handbook 44 requires that the installation, maintenance, and use of weighing and measuring equipment be in accordance with manufacturer's specifications; however, it does not require that the device be installed, maintained, and operated in a safe manner. In addition, if inspectors or servicepersons observe what they feel are potentially hazardous conditions, there is no requirement in Handbook 44 that they can cite to require the owner or operator of the device to correct the hazardous conditions before an inspection can continue.

Similarly, there is no requirement that a device be designed to insure that its normal operation does not pose a safety risk to the operator or user of the device. The Task Force recognized that most manufacturers adhere to basic industry safety standards that are sufficient to mitigate most potential hazards associated with device design.

Task Force members also noted there is no paragraph in the "NOTES" sections of the codes in Handbook 44 that references the need for the inspector or serviceperson to adhere to safety requirements that are in effect at an inspection site. The Task Force was concerned that an inspector or serviceperson might enter a place of business to perform a test and make no effort to determine what safety requirements were in effect at the inspection site. It would be important for them to know, for example, if ignition sources are prohibited in certain locations on the site so that they could refrain from smoking or using inappropriate equipment in these areas. Failure to abide by such safety requirements presents a potential hazard to the safety of the inspector or serviceperson and other individuals at the inspection site; places the business firm in the position of violating safety requirements; and sends an erroneous message to the business firm that the regulatory official or serviceperson is exempt from following safety requirements.

The Task Force discussed the merits of making such additions to Handbook 44 and whether or not such additions were, in fact, appropriate. Task Force members noted that weights and measures officials are not experts in the area of safety, and they are generally not trained to identify potential safety hazards or to identify violations of local, State, or Federal safety requirements. It was agreed that if requirements were added to the Handbook to address safety requirements as part of the device inspection, the wording should be similar to that used to require that devices be installed, maintained, and operated according to manufacturer's specifications. For example, if an inspector or serviceperson identifies a condition of installation or maintenance that he or she believes is not in accordance with the manufacturer's specifications, it is necessary to research the literature provided by the manufacturer for the device or, ideally, to contact the manufacturer for further information. A similar approach should be taken with the identification of a potential safety hazard; if an inspector observes what he or she believes to be an unsafe condition, it may be necessary to study the manufacturer's literature and also to contact a local safety official to make an official interpretation of the situation.

Task Force members concurred that the addition of a paragraph or paragraphs to Handbook 44 to address safety concerns would be appropriate, and determined that a recommendation should be presented to the NCWM Specifications and Tolerances Committee for their consideration. Task Force members agreed that adding references to safety requirements to the General Code would be a good approach. The Task Force believed that any language to be added to Handbook 44 to address safety concerns was most appropriately developed by the S & T Committee; however, the Task Force recognized that it should present some suggested language with its proposal to provide the Executive Committee and the S & T Committee with a better understanding of the approach that the Task Force had in mind. Consequently, the Task Force developed some suggested language to be considered for addition to Handbook 44. The Task Force has no preference as to the final language to be used, provided that safety concerns are adequately highlighted.

### **Recommendations to the NCWM**

The Task Force reviewed the recommendations to be made by the Task Force to the Executive Committee of the NCWM. The Task Force agreed upon the content of the recommendations and developed the final language to be used. The Task Force decided that the recommendations would be included in a separate section of the final report.

## **Final Report**

The Task Force developed an outline to be used as the format for the final report and decided that the outline should be included at the beginning of the final report. The Task Force also identified the pertinent attachments to be included with the final report.

The Task Force recognized that many NCWM members might prefer to read about the main points of the work and findings of the Task Force prior to reading about its activities in more detail. Therefore, the members decided to include an executive summary at the beginning of the report that would provide an overview of the activities and findings of the Task Force.

The members of the Task Force agreed that the final report should be presented to the NCWM Executive Committee at the annual meeting of the NCWM and that the compilation and presentation of this document would conclude the work of the Task Force.

## **Major Accomplishments and Activities of the Task Force**

The following is a summary of the major accomplishments and activities of the Task Force:

- Developed addendums to NIST Handbooks 143 and 145;
- Collected, reviewed, and collated information on safety to create a safety library;
- Developed suggested additions to NCWM Publication 12, including revisions to the EPO's to include safety information, the development of an introductory section on safety, and the development of a glossary of safety key phrases;
- Established a working relationship between the NCWM and OSHA;
- Developed a final report in a format designed to:
  - (1) Provide assistance to the NCWM Committee on Education, Administration, and Consumer Affairs in its development of the NTP Module on Weights and Measures Administration; and
  - (2) Assist weights and measures jurisdictions and other NCWM members in the development of a new safety program or the modification of an existing program.

## V) **Who Needs a Safety Program? -- Making a Commitment**

Almost every organization can realize benefits from establishing a safety program. The reasons for establishing a safety program are many. Among the most basic reasons for establishing a safety program are reducing workplace injury, disability, and property damage. In addition, many agencies are obligated by legal requirements to establish a safety program. There are also a number of less evident, but just as valuable, benefits which can be derived from the implementation of an effective safety program. Both employers and employees benefit from a well-established safety program; moreover, both have specific responsibilities in maintaining a safety program that is beneficial and worthwhile. The long term cost savings which are often realized from an effective safety program are significant incentives to implement a safety program. However, it is the human element, the basic responsibility for maintaining a safe work environment for employees, that should remain the prime impetus for an agency to establish a safety program.

### **Some Basic Philosophy**

When considering the establishment of a safety program, many questions arise. Among the most common questions that are asked by many employers are "Why should I establish a safety program?" and "How will it help the agency?" The reasons for establishing a program are varied, but all have the same end result -- reducing workplace injury, disability, and property damage.

Providing a safe working environment reduces the potential for injury to employees and other persons, medical costs for injuries, lost work time due to injuries, decreased productivity due to injury, and damage to equipment and property. A safe working environment also contributes to the improvement of employee moral; an employer who establishes and conscientiously maintains a safe work environment sends a clear message to employees that their safety and health are important to the agency. A correctly implemented safety program may even increase productivity since better equipment, better working conditions, and improved employee moral can all contribute to increased efficiency.

### **Legal Reasons**

Many employers may not realize that there are probably legal obligations that require them to establish a safety program. There are currently OSHA rules in effect in many States requiring employers to notify employees of potential safety hazards that may be present in their workplace environment. OSHA standards such as the Hazard Communication Standard (29 CFR 1910.1200) (also known as "The Employee's Right-to-Know") and the Occupational Exposure to Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450) (which includes requirements for a "Chemical Hygiene Plan") are intended to reduce the possibility of workplace injury by informing employees about potential safety hazards that may exist in the workplace and providing a full disclosure about the nature of products to which they are exposed. The implementation and enforcement of such laws help to educate the employer and the employee about the potential hazards associated with a product or procedure; to decrease the exposure of employees to hazardous products and conditions; and to encourage the use of safe work practices by all employees, thereby decreasing the potential for injuries.

Failure to establish and maintain a safety program or to follow established safety laws and regulations may possibly result in penalties to the employer. In many cases, if an agency does not establish a program, it can and will be forced to establish a program and its budget will be used for that purpose.

## **Benefits**

Among the most elemental benefits for establishing a safety program are reducing workplace injury, disability, and property damage. In addition to these benefits, there are other less-evident, but just as valuable, benefits to be derived from implementing an effective safety program. The implementation of a safety program often has a monetary benefit for an agency which is measured not only in terms of dollars, but also in terms of employee work time and employee health. Many employers find that the benefits realized from the decreases in costs far outweigh the expenses incurred in the implementation of the safety program.

Following the implementation of an effective safety program, an agency often observes an improvement in employee health, moral, and well-being. Better working conditions, proper safety equipment, and proper training can decrease the amount of work-related illness and injury experienced by the employee. For example, training a scale inspector on the use of proper lifting techniques can decrease the frequency of back injuries due to improper lifting. Similarly, a well-ventilated work area and the use of chemical hoods in the laboratory can help to prevent illness due to inhalation of chemical fumes. When an employee understands that the employer is concerned about maintaining a safe work environment for the health and safety of the employees, an increase in employee moral often results. This improvement in moral also contributes to the employee's general feeling of well-being and may generate renewed enthusiasm about the work.

A comparison of costs before and after the implementation of a safety program often reveals beneficial changes. Better working conditions, proper safety equipment, and proper training can impact significantly on the employee's performance and, consequently, can affect the costs observed by the agency. For example:

### **Sick Leave, Medical Costs, and Insurance Costs**

A decrease is often observed in work-related illness or injury as a result of the byproducts of better working conditions, proper safety equipment, and proper training. This also results in a decrease in the amount of sick-leave paid to employees. Similarly, the employer may see decreased costs in health care for injured employees and a decrease in insurance claims for work-related injuries.

An employer may also observe a decrease in health insurance premiums with a well-implemented safety program. An insurance company may look upon a safety program as a preventative measure for decreasing work-related injury and illness.

The improvements made to the work environment with the implementation of a safety program may eliminate other risks such as fire hazards. Training such as defensive driving techniques and improved maintenance on vehicles may decrease the risk of vehicle accidents. The reduction of risks such as these may help to decrease property insurance premiums.

### **Property, Equipment, and Production Costs:**

As part of implementing a safety program, an agency often purchases new equipment, modifies or repairs existing equipment, and provides employee training to reduce a potential safety hazard. Although some initial costs may be experienced in the purchase or modification of equipment, these costs are usually outweighed by the benefits that can be derived. Suitable, properly operating equipment decreases the amount of employee injuries and absences, improves efficiency and production, and reduces repair costs.

Worn, faulty equipment can contribute to work-related injury and illness. As the frequency of employee absence due to work-related injury or illness increases, production can decrease. The cost of production can rise even higher if it is necessary to require other employees to work overtime to compensate for absent employees. Similarly, worn, faulty equipment may not operate as efficiently as equipment that is in good operating condition; this can also decrease productivity. The frequent repairs required for worn equipment can increase repair costs and decrease productivity due to the amount of time required for equipment repair.

The use of inappropriate equipment for a task can be dangerous, inefficient, and costly. Inappropriate equipment can increase injury to employees and, consequently, increase employee absence and decrease production. Because inappropriate equipment is not as efficient for a task as properly selected equipment, it can also contribute to decreased efficiency and decreased production. If equipment is not being used as intended by the manufacturer of the equipment, damage to equipment can often result; this leads to costly repairs and decreased production while the equipment is being repaired. In some cases, improper use of equipment can damage other pieces of equipment or property.

Safety and procedural training teaches the employee how to operate equipment properly and safely; this decreases the chance for injury and employee absence and also decreases the likelihood of damage to the equipment. In addition, training can enable employees to perform more efficiently and effectively.

Another less evident benefit of establishing a safety program is the discovery of existing, but unobserved safety hazards. When implementing a safety requirement, other safety hazards may be uncovered which would not otherwise be discovered until they resulted in personal injury or damage. For example, part of complying with the requirement to post a placard on a vehicle which transports hazardous materials the vehicle must be inspected. During the vehicle inspection other potential safety problems (e.g., faulty brakes or loose parts) may be discovered; such problems can be corrected before causing injury or damage. Similarly, the job hazard analysis is useful in revealing many of the potential safety hazards associated with a particular activity and the potential hazards can be minimized before injury or damage occurs.

The following is a summary of the benefits to be derived from establishing a safety program that were discussed in detail above:

- Improved employee health, moral, and well-being;
- Improved employee attitude and enthusiasm;
- Decrease in work-related injury and illness;
- Decrease in the amount of sick-leave paid to employees;
- Decrease in health care costs for injured employees;
- Decrease in insurance claims for work-related injuries;
- Decrease in insurance premiums;
- Decrease in employee absence due to work-related injury or illness;
- Decrease in the costs for damaged equipment or property;
- Increase in production time;
- Increase in efficiency and productivity; and
- Increase in the discovery and resolution of safety hazards before injury or damage occurs.

## **The Responsibilities of the Employer and the Employee**

Perhaps the most crucial responsibility shared by the employer and the employee is the commitment which each makes to safety in the workplace. This commitment is essential to reducing workplace injury and property damage and is demonstrated in many ways:

### The Employer

The demonstration of the employer's commitment goes beyond simply announcing or publishing safety policies; the employer's commitment must be evident in many other facets of the workplace operations. The employer's commitment is demonstrated through the employer's personal concern for the safety of the employees; the emphasis which is placed on adhering to safety regulations and following safe work practices; the response of the employer to correct unsafe work conditions or safety violations as they are discovered; and the fulfillment of the other responsibilities of the employer/employee such as those listed later in this section. One of the most critical demonstrations of the employer's commitment is that of setting a good example for workplace safety and health.

### The Employee

The demonstration of the employee's commitment to maintaining a safe working environment is just as crucial as that of the employer; workers are just as accountable as their employer for their own safety and health. Safety policies and regulations have little benefit if they are not followed by one of the groups they are designed to protect -- the employees. The employee's commitment is demonstrated by a conscientious adherence to safety policies and regulations; to the development of safe work habits and proper use of equipment; and to the immediate reporting of unsafe working conditions. Employees must understand that their own personal commitment to workplace safety promotes not only their own personal safety but also that of their coworkers; failure to adhere to safety policies and regulations threatens not just their own personal safety but that of those around them.

Among the other responsibilities of employers and employees are the following:

(1) Mandating and maintaining better working conditions;

The employer must mandate the implementation of safety regulations and policies and must clearly outline the consequences of violating these requirements. The employer must also thoroughly evaluate and, if needed, improve the working conditions of the employee to decrease potential safety hazards. The employees have the responsibility of maintaining a safe work environment by carefully following all safety requirements mandated by the employer and local laws.

(2) Providing and properly using resources;

Adequate equipment, training, and access to safety information resources must be provided to the employee to promote a safe working environment. Employees must use all equipment as intended and follow all safety policies to insure that a safe working environment is maintained.

(3) Encouraging everyone to participate;

Safety programs are most effective when everyone participates, and encouragement to participate in a safety program can be generated from various sources. The employer must look for and use ways to encourage everyone's participation in workplace safety, including all levels of management. Employees can be very influential in persuading coworkers to participate in and follow a safety program. Outside functions such as training seminars and demonstrations can also provide needed encouragement to inspire all levels of employees to participate in the program.

(4) Maintaining open channels of communication;

An effective safety program can only be sustained if channels of communication are kept open between the employer and the employees. The employer must be made aware of safety hazards in order to take corrective action, and the employee must be made aware of potential safety concerns as management learns of them in order to protect himself or herself from possible injury. The employee must feel free to voice concerns and must also be assured that the concerns will be given serious consideration.

(5) Implementation and use of a good reporting system

A good reporting system insures that the employer is notified of a safety hazard as soon as it is discovered. An effective reporting system can decrease the potential that a hazard will be discovered only as the result of an accident; by discovering the hazard before an accident occurs and taking corrective action, the possibility of personal injury can be decreased. Employees should be provided with instructions on how to report a potential or acknowledged safety hazard, and the employer should encourage employees to submit such reports. In order for a reporting system to remain effective, the employer must respond quickly to reports of safety hazards and must indicate to the employee that measures have been or will be taken to correct the hazardous condition. Regular self-inspections are an excellent means of insuring that safety regulations and policies are being followed and also for uncovering potential safety hazards that may not have been evident before the inspection. Taking corrective action as the result of a reported hazard is a decisive act that confirms the company's commitment to maintaining a safe workplace environment.

(6) Balancing Productivity and Safety

Neither the employer nor the employee should sacrifice safety for productivity. An employer or employee will often claim that productivity will be sacrificed if safe work habits are followed or safety equipment is used. In the long run, an increase in productivity is often realized when an effective safety program is in place; there are usually fewer injuries and less lost time of employees and equipment, and employees are often more productive when they know that the employer is committed to maintaining a safe work environment for them.

## VI) **Establishing a Safety Program in the Weights and Measures Workplace -- Where to Start**

Because of the variability in the design of equipment used by weights and measures officials and servicepersons and various other factors in the workplace that can affect the safety of its use, it is difficult to provide comments about the potential hazards associated with a particular task or about the structure of a safety program for an individual jurisdiction. However, there are several general areas to consider when establishing a safety program or evaluating the potential safety risks associated with a particular task. *These recommendations are provided only as guidelines or suggestions. These recommendations are not intended to describe the only means of establishing a safety program or to describe the elements of a program which is ideal or appropriate for every jurisdiction. Conditions and circumstances are different for every jurisdiction as are many local and state safety requirements. It is essential that an agency work closely with the local or State OSHA official or departmental safety officer when developing a safety program to insure that all potential safety hazards have been adequately addressed for the unique situation of the agency, to insure that the program meets the specific needs of the agency, and to insure that all local and State safety requirements are met.*

### **Appoint a safety officer.**

One of the first steps in establishing a safety program in an organization is to designate a person as the "safety officer." By addressing all safety concerns through a single person, an organization can help insure that safety policies and decisions will be uniformly and consistently implemented. The safety officer should be given responsibility for overseeing the organization's safety program; this should include the organization, management, and regular maintenance of the safety program. The safety officer should also be responsible for working with any existing safety committees within the organization as well as local and State safety officials as deemed necessary. The safety officer should also be given the authority to make decisions necessary to maintain an effective program. When selecting the safety officer, the administrator should be sure that the individual understands the time commitment necessary to properly maintain the safety program and that the individual will be permitted to set aside the time required. The safety officer can perform the duties associated with the title on a full time or part-time basis depending upon the size of the agency and the workload of the agency's staff.

If a program is part of a larger organization, there may already be a safety officer designated for the entire organization as well as a structured safety program for the organization. If this is the case, the administrator of a program should work with that person to ensure that the program meets all departmental safety requirements and to discuss any specialized needs which the program may have. The administrator may still wish to designate a safety officer for his or her own program to act as a liaison with the departmental safety officer and to facilitate the resolution of specific safety issues within the individual program.

If a program has personnel located at more than one facility, the program administrator may find it advantageous to appoint a safety officer at each location. This would help to insure that safety information is distributed and safety concerns are addressed as quickly as possible at each site. This can improve the implementation of safety practices at each facility since the safety officer is able to monitor the activities of the facility on a daily basis. In addition, this can be helpful in establishing organizational policies to address specific circumstances within the organization since the safety officer at each facility is familiar with the geographical layout of the site and the equipment located there.

Some weights and measures programs have more than one major **type** of activity (e.g., a motor-fuel testing division and a packaging and weighing division). If this is the case, the program administrator may consider appointing a safety officer in each division to monitor the division's activity. Since the potential safety hazards associated with different types of activities can vary, the establishment of a safety officer for each activity can help to insure that these potential hazards are adequately addressed. Since the safety officer works in the division being monitored, it is likely that he or she will be very familiar with the procedures used in the division and can better respond to questions concerning the establishment and implementation of organizational safety policies.

### **Developing the Basic Structure**

After appointing a safety officer, an overall structure for the safety program must be developed.

In a letter dated March 29, 1991, Mr. Thomas J. Shepich, U.S. Department of Labor, OSHA, outlined four main areas to consider when establishing a safety program. (This letter was sent to the Task Force by Mr. Shepich in response to a request from the Task Force to review the safety information added to the EPO's in NCWM Publication 12.)

Using the recommendations contained under each of the headings in Mr. Shepich's letter, the Task Force has expanded these ideas into the following suggestions. OSHA's recommendations for each heading are indicated by *italicized* type immediately following each of the four lettered headings:

**(a) Conduct a job hazard analysis.**

*Information regarding actual job conditions should be used to identify potential hazards.*

A job hazard analysis can help to identify potential safety hazards associated with a specific task. The information obtained from the job hazard analysis can then be used to determine what actions are required to reduce the potential risk to the person performing the task.

### **Collect Information on Current Practices and Procedures**

Information on current practices and procedures should be collected and a detailed description of how each job or task is performed should be documented. This should be done for various tasks using different types of equipment which is available within your jurisdiction (e.g., testing a vehicle scale using two different types of weight movers). This information should also be gathered for various environmental conditions to insure that potential hazards from environmental conditions are addressed (e.g., testing a vehicle tank meter in icy weather introduces the hazard of slipping on icy surfaces when mounting the prover and moving around and requires extra care in locating a stable surface for setting up the prover). A review should be made of the examination procedure outline used for each testing procedure within your jurisdiction to insure that all conditions specific to your jurisdiction are considered in the safety reminders and instructions.

An agency may find it helpful to develop a checklist or form for gathering information about the details of a procedure and for recording observed or potential safety hazards. Such a form or checklist could provide a uniform method of documenting all of the inspection or laboratory procedures used by an agency's employees, and the completed checklists could be used to facilitate the development of safety policies for the agency.

It may be helpful also to document the procedures of a particular activity on videotape. For example, a videotape might be made of the inspection and testing of a retail-motor fuel dispenser, starting at the time that the inspector or serviceperson arrives at the test site and ending when he or she leaves the site. The videotape can be reviewed repeatedly and it serves to document the procedure in great detail. The videotape can be reviewed by the safety officer and/or a departmental safety committee when establishing safety policies to help identify potential safety hazards in the procedure. The agency may find the videotape useful when working with local OSHA officials or consultants to develop a safety program which will address the safety hazards which are present in the jurisdiction. The agency may also consider using videotapes of procedures as a means to emphasize the use of proper testing procedures. Videotapes can be shown during training sessions or safety meetings to point out the "right" way to perform a procedure, using correct test procedures and adhering to all safety policies and also to point out the "wrong" way of performing the procedure.

### **Review the Procedures and Identify Potential Safety Hazards**

When the information has been collected, a thorough review of the current procedures and practices should be made to identify potential safety hazards. Once the potential hazards are identified, additional steps can be taken to reduce or eliminate the potential risks.

A review by an individual or individuals outside of your program can be valuable; potential hazards may be inadvertently overlooked by someone who is very familiar with your procedures, but quite obvious to another person who is not connected with your program. A job hazard analysis should include input from an individual or individuals with training in safety to insure that no potential safety hazard is disregarded.

A review of the EPO's in NCWM Publication 12 with your local OSHA official is useful in helping you to determine how to address the hazards present in individual situations in your jurisdiction. The Task Force has developed suggested revisions to NCWM Publication 12 to include safety information. The revisions include the addition of an introductory section on safety, "Safety Considerations"; revisions to each EPO to include safety reminders; and a "Glossary of Key Safety Phrases" to further define the reminders in the EPO's. When the revised NCWM Publication 12 is issued, a review of the safety reminders in each EPO and in the glossary may help you to identify potential safety hazards that may be present during routine inspection activities in your agency.

### **Collect Related Safety Information**

During the process of performing the job hazard analysis you may find it useful to collect information pertaining to safety hazards associated with the various procedures used in your jurisdiction. Several of the organizations listed in Section VIII of this report maintain safety libraries that contain information on a wide variety of safety-related subjects as well as information about the hazards associated with exposure to various products.

**(b) Determine what safety and health training is needed.**

*As a result of the job hazard analysis, areas where training is necessary for the NCWM inspectors can be identified.*

By identifying potential safety hazards associated with a particular task, the job hazard analysis will help you to identify the types of training that would help to reduce the risk of personal injury to the people who routinely perform that task. For example, an inspector or serviceperson testing a medium capacity scale is exposed to the potential risk of a back injury when moving 50-lb weights during the test procedure; providing safety training in the use of proper lifting techniques may decrease the risk of a back injury for that person.

When you have completed your job hazard analysis, you should contact your local and/or State OSHA representatives to determine if they can assist you in determining what types of safety training are needed (or even required by law) for your employees for the various tasks performed within your jurisdiction. Consultants are also available in many areas to assist you in devising a training plan or obtaining safety training for your employees. When working with agencies other than OSHA to arrange for safety training, your safety officer should verify that the training will meet with any requirements established by OSHA.

**Schedule Training on a Regular Basis for All Employees**

Regular safety training for employees is essential both for establishing a new safety program and maintaining an existing program. Formalized safety training for employees will insure that all employees receive uniform, consistent information pertaining to safety hazards and how to minimize the risk of personal injury. Ideally, the training should be presented by someone who is an expert in the field of workplace safety and who is familiar with all applicable state and local OSHA requirements.

When new equipment is purchased or current equipment is modified, training must be provided to all employees who will use the equipment to insure that they understand the safe and proper use of the equipment. This is especially essential if the new equipment operates differently or has different features from equipment currently used by the employee. Similarly, if the modification of current equipment changes the operation of the equipment, it is important that the employee be familiar with the changes and understand the proper and safe operation of the modified equipment.

Training should be presented to all employees both new and experienced on a regular basis. New employees should receive proper safety training before engaging in any activity which involves a potential safety risk. Even employees who have been employed with the agency for a long period of time can benefit from routine safety training. Safety requirements periodically change as new information is discovered, and procedures to protect an individual from potential safety hazards can change accordingly. Only through routine training can employees receive the updated training needed to help them take proper precautions to protect themselves and their coworkers from hazardous conditions. Many times an experienced employee who has been performing a particular task on a routine basis can lapse into bad habits and become careless in following required safety procedures; regular training can help to reinforce the importance of good safe work practices and can reduce the possibility that these bad habits will be passed on to other employees. Conversely, many experienced employees are extremely conscientious about adhering to safety practices and can provide a good example to new employees. Such employees can often emphasize the necessity for adhering to a particular safety practice by

relating to other employees a personal experience with a hazardous condition, thus underscoring the importance of safe work habits.

Reviewing with employees the safety information proposed for inclusion in NCWM Publication 12 and NIST Handbooks 143 and 145 may be useful in emphasizing the importance of safety in the workplace and in conveying information about potential safety hazards. The "Safety Considerations" section, the EPO's with safety revisions, and the "Glossary of Key Safety Phrases" in Publication 12 may be helpful in highlighting potential safety hazards which are associated with various types of inspection activities for inspectors and servicepersons. Similarly, the proposed safety revisions for NIST Handbook 143 and the proposed addendum for NIST Handbook 145 may be helpful in emphasizing the importance of safety to laboratory metrologists.

The agency may consider videotaping examples of inspections and testings and of laboratory procedures as a means to emphasize the use of proper testing procedures. These videotapes can be shown during training sessions to point out the "right" way to perform a procedure, using correct test procedures and adhering to all safety policies and also to point out the "wrong" way of performing the procedure.

Safety training should not be limited to just teaching employees about the proper use of equipment and safety procedures. Other types of training which relate to the health and safety of the employee are also very beneficial. For example, classes in first-aid and cardiopulmonary resuscitation can help to prepare coworkers to assist an injured employee.

(c) **Determine the control (administrative, engineering, and personal protective) method needed.**

*The Material Safety Data Sheets and the job hazard analysis should be helpful in the proper selection of personal protection equipment and the reduction of exposure time. If engineering controls are utilized on a site, lesser measures of protective equipment and administrative controls may be needed.*

When a safety hazard has been identified it is necessary to determine the type of control that will be most effective in minimizing the risk involved. In order to reduce the safety risk it may be necessary to change the way a procedure is carried out or to obtain personal protection equipment for the person performing the task. **Before making changes to a procedure or purchasing new equipment, you should carefully consider the results of the job hazard analysis and other tools available to you such as the Material Safety Data Sheets (MSDS's) provided by manufacturers of hazardous products (for more information see page 42); prudent use of these tools to evaluate the situation can save time and money and will help you to identify the most effective way of reducing the risk.** After modifying existing equipment or purchasing new equipment, training on the safe and proper use of the equipment should be provided to those individuals who will be using it.

**Selecting the Control Method**

A potential safety risk can often be minimized or eliminated completely simply by changing the established policy or procedure to be followed for a given task. Use the information obtained in the job hazard analysis of the task to determine how the task is currently performed, then examine alternative means of performing the task which would eliminate that part of the procedure which precipitates the safety hazard or would minimize the risk associated with the activity. For example, if an inspector or serviceperson stores a weight kit on the top shelf of a

rack in the rear of his vehicle, there is a potential for a back injury due to the height to which the weight kit must be lifted. By changing the designated storage location for the weight kit to the bottom of the rack, the potential for injury due to lifting the weight kit to a higher level is reduced. The potential risk can be further reduced by providing the inspector or serviceperson with training in the use of proper lifting techniques.

### **Purchasing Equipment**

Before purchasing **any** equipment, check to be sure that the equipment meets all local, State, and Federal safety requirements. Evaluate the equipment carefully before purchasing, and be sure that the manufacturer or supplier understands the intended application for the equipment. Documenting the safety requirements in written specifications for the equipment will help to insure that the manufacturer or supplier understands the safety requirements applicable to the intended use of the equipment.

When purchasing **new test equipment**, consideration should be given to ways in which equipment design can minimize potential safety hazards; the job hazard analysis can provide information about the potential hazards which were identified for any procedure in which the new equipment might be used. For example, the design of the steps on a trailer-mounted prover should be reviewed to insure that they minimize the risk of slipping or falling from the prover.

**Personal protection equipment** should only be purchased after determining that potential safety hazards have been minimized as much as possible by a careful review and modification of procedures. In some cases changing the policy for procedures to be used to perform a given task may eliminate the risk in question completely; purchasing equipment without first carefully reviewing alternative controls can be a costly and sometimes ineffectual action. Use the information obtained in the job hazard analysis and input from your local and State OSHA officials to determine whether or not other means of controlling the safety hazard as discussed earlier in this section will adequately minimize the risk; once these other means have been addressed, personal protection equipment can be considered.

There are many sources of personal protection equipment available. Only personal protection equipment that meets all local, state, and federal safety requirements and that will mitigate the safety hazard should be considered. The proper use of personal protection equipment can not be overemphasized. Once appropriate personal protection equipment has been purchased, it is essential that employees be given adequate training on the use of the equipment; improper use can render the equipment ineffectual and even hazardous to the employee.

The results of the job hazard analysis may indicate that new testing equipment or the modification of current equipment is not necessary; the hazard may be mitigated by the purchase of **supplemental equipment** which will make a task easier and less hazardous to perform. For example, the purchase of a roller table to facilitate the movement of heavy weights; the use of small hand carts to reduce the amount of lifting and carrying required in transporting provers during the inspection of retail motor-fuel dispensers; the use of caution signs, safety cones, or fluorescent vests to reduce the potential of personal injury or equipment damage during the testing of retail motor-fuel dispensers, taximeters, vehicle-tank meters, or large scales; the purchase of 25-lb weights to replace 50-lb weights; or the purchase of first-aid kits for installation in all vehicles and in the metrology laboratory. *As with the purchase of new equipment or the modification of equipment, the individual requirements of a jurisdiction must be carefully considered before purchasing supplemental equipment to determine that the equipment is appropriate and necessary for the task.*

## **Modification of current equipment**

In some cases, it may be possible to modify existing equipment to minimize or eliminate a potential safety hazard. The decision to modify equipment should be made based on information obtained from the job hazard analysis and information from local and State OSHA officials; this information should indicate that modification of the equipment provides the most effective means to minimize the potential safety hazard. ***Prior to making any modification to equipment, an agency must take appropriate precautions to insure that the proposed modification does not violate any local or State safety requirements or change the equipment manufacturer's design in a manner which might render the equipment unsafe in another way.***

In the course of its work, the Task Force was provided with a number of examples of how weights and measures jurisdictions or service agencies have modified existing equipment to address a safety concern. Some of the many examples brought to the attention of the Task Force are listed below.

***NOTE: These modifications may not be appropriate for every jurisdiction. Check with local and State OSHA officials to determine whether these modifications would be appropriate for the specific circumstances in your jurisdiction before making any such modifications.***

- Metal cage enclosure around an LPG prover -- The cage prevents tampering with the prover and valves when the prover is unattended, yet provides adequate ventilation to prevent the accumulation of product fumes. The cage also reduces the possibility of damage to the prover.
- Securing of weights on a vehicle -- Securing of weights can be accomplished in a number of ways: using a separate enclosure or box in which to store weights; using weights that can be locked down with specialized fasteners.
- Modification to vehicles -- Installation of a separate enclosure with venting to the outside of the vehicle for storing 5-gallon test measures. Installation of a partition between the driver and the area where equipment is stored to reduce the possibility of injury from the equipment in the event of a vehicle collision.
- Extension of height on funnels used in testing retail motor-fuel dispensers -- The added height may help to reduce stress on the back when returning product to storage.

## **Training Employees to Use the Equipment**

New equipment may operate differently from equipment currently in use or have features which are unfamiliar to the employee, and modified equipment may operate differently from the original version. It is important that adequate training be provided to all employees who will use the equipment to insure that they understand how to safely and properly operate the new equipment and also to insure that safety hazards are not created by the improper use or operation of the equipment. Check to see if the manufacturer or supplier of new equipment is willing to provide instructions on the use of the equipment. Other sources to check include local or State OSHA offices, consultants, organizations which provide safety training, and local industry groups. Without proper training on the safe use of equipment, the care taken in the selection and purchase of the equipment will be ineffectual, and the use of the equipment may even be hazardous to the employee.

**(d) Provide a written safety and health program.**

*An effective method for emphasizing safety and health is to have a written program as exemplified in your document [The EPO's in NCWM Publication 12 as revised by the Task Force and the introductory section on safety and glossary of terms]. We recommend that it would be made available to all inspectors for pre-inspection planning.*

Even the most carefully designed safety program can be ineffectual if the program is not adequately documented. Documentation of the program's structure and policies helps to promote consistency in adhering to safety regulations and to emphasize the safety and health policies established by the organization. All employees should receive written copies of the documentation and the information should be communicated and reinforced through training seminars and safety meetings. Once the documentation is complete, the policies and procedures can be communicated to the management and employees and implementation of the safety program can progress.

The structure and format used to document the safety program depends on the needs of the agency. Documentation might be in the form of a single safety manual with separate sections to address different areas, or in the form of separate publications that each address a particular area. Documentation should include a statement of purpose; a clear indication of the agency's commitment to the safety and health of the employees; an overview of how the program is structured; the local, State, and/or Federal safety requirements which must be followed or a source where the regulations can be obtained; a description of safety policies established by the organization; procedural information such as how to report unsafe conditions, how to obtain safety information on hazardous materials, and the scheduling of safety meetings; information on obtaining copies of MSDS sheets for materials used by the employees and how to obtain an explanation of the information on the MSDS sheet; and any other information pertinent to the safety program.

Although the documentation may include a variety of safety issues which are specific to an individual program, there are several areas that should be included in any safety program. Information pertaining to these procedures should be included in the documentation and implemented as part of the safety program as it is established:

- How to Report Unsafe Conditions and Potential Safety Hazards

Instructions should be provided to advise the employee how to report an observed unsafe condition or potential safety hazard including who to contact, what observations to make, what documentation and information to provide to the contact person or persons, and any other required actions.

- What to Do in the Event of an Accident

Specific instructions should be given to assist the employee in preparing to respond to an accident. More than one set of instructions may be required to address different types of inspection activities. These instructions should include basic information such as where to go; the names and phone numbers of the people or agencies to be contacted and the information to provide to them.

- How to Submit Recommendations to Reduce Risks or Hazards

This should include a step-by-step description of how to submit recommendations on reducing risks or hazards, including: the name(s) of the person(s) to submit the recommendation to; the type of information to provide; the required format of the submission; and the time frame in which the employee should receive a response to the submission. (NOTE: When establishing the time frame for responding to an employee submittal, management should be particularly careful to select a time frame which can reasonably be met by management. Failure to respond within a stated time frame may send the message that management does not consider safety a high priority issue. This apparent lack of management commitment to maintaining a safe work environment can discourage employees from submitting recommendations in the future and may even discourage the reporting of safety hazards.)

- Safety Meetings

Information should be provided that details how frequently meetings will be held, who will attend, how issues should be presented for discussion, and other relevant information.

In addition to documenting these procedures, the success of the safety program is dependent upon both management and employees consistently following the procedures. If management does not respond to an employee's report of an unsafe condition in a timely manner or does not acknowledge the submission of a suggestion for reducing a safety risk, it is unlikely that the employee will go to the trouble of reporting future incidents or making future submissions. Likewise, by failing to report an observed unsafe condition employees may endanger themselves and other employees and set a poor example for other employees to follow.

Copies of the documentation should be distributed to all employees. The effective operation of the safety program is dependent upon all employees operating under the same safety policies and requirements. Distribution of the documentation to all employees is an effective way of communicating to employees all of the safety policies and procedures that must be followed and insures that all employees receive the same information. The documentation can also serve as a reference document that the employee can use to become familiar with the potential safety hazards to which he or she is exposed. The documentation should be updated on a regular basis as needed to reflect changes in safety requirements or policies and other information included in the documentation.

### **Communicating Safety Information to Employees**

In addition to the four main elements outlined earlier in this section, there are several other components which should be considered and included in an effective safety program. These additional components provide an effective means of encouraging participation in the safety program and of insuring that information about the safety program and its implementation is communicated to management and employees.

Effective communication between management and employees is essential to the smooth operation of the safety program, and lines of communication must be established to insure that pertinent safety information reaches those affected by it as quickly as possible. Management must be able to quickly

notify the employee of any unsafe conditions or changes in safety requirements, and employees must be able to quickly and easily inform management of observed hazards or potential hazards. A good communication system is also effective for the interchange of ideas concerning the implementation of safety policies and how the program can be improved. The communication link between management and employees can be facilitated by the agency's safety officer.

An effective safety program employs a variety of communication forms, including written, visual, and verbal to emphasize vigilance and safety awareness and to motivate people to participate in the safety program. The additional elements which are outlined below use various means to communicate the importance of safety in the workplace.

### **Written Communication**

Provide employees with copies of the written documentation of the safety program as indicated in the basic element that describes documentation for a safety program. Written communication of safety information can help management and employees to better visualize the structure of the safety program. The documentation can also serve as a reference to help resolve questions about safety issues as they arise.

### **Safety Meetings**

Safety meetings and seminars facilitate the verbal communication of safety information and can be used to emphasize the commitment of management and the employees to maintaining a safe work environment. These meetings can be used in addition to safety training to communicate the application and use of policies and procedures in the written safety documentation provided to the employee. Safety meetings can also be used to examine and revise existing policies and procedures. Safety meetings should be scheduled as needed or as required by local requirements and should be scheduled to include all employees who are affected by the topics of discussion.

Safety meetings also provide an excellent forum for responding to and discussing input from management and employees on ways in which the safety program can be improved. Employees are encouraged to present their views on the current program based on personal experience and management can obtain feedback on how the program is actually functioning.

### **Motivating People to Participate**

The presentation of certificates, awards, and other incentives can help to encourage the participation of employees and management in the safety program. By publicly recognizing contributions to the operation and improvement of the safety program, people are encouraged to participate and contribute new ideas. Similarly, publicly recognizing accomplishments involving safety practices helps to generate enthusiasm about participation in the safety program and emphasizes the importance placed on maintaining a safe work environment by management.

The use of posters, videotapes, and various audio-visual aids can help to generate interest and participation in the safety program and can help the employee to better retain the information in memory. Items such as posters also provide a constant, visible reminder of the importance of safety. These items can help employees to better visualize proper safety techniques and practices and to relate to how the techniques are used.

## **Safety Committees**

Safety committees (either existing or newly established) can be useful in evaluating safety issues and communicating information to employees and management. A safety committee can be appointed as a permanent body or in response to a specific safety issue which needs to be reviewed. While the composition of these committees varies, it is often helpful to include management as well as employees who represent various interests (e.g., a large-capacity scale inspector, a laboratory metrologist, an LPG meter inspector, a field supervisor, etc.) in the agency according to the tasks assigned to the committee. By including representation from all of the groups which are affected by an issue, the views of the committee tend to be more balanced and the decisions may be more readily accepted by the groups represented on the committee.

## **Obtain and post current Material Safety Data Sheets (MSDS's)**

MSDS's are provided by the manufacturer of a product to identify the product's basic characteristics and hazardous information. MSDS's typically provide information pertaining to the characteristics of a product such as hazardous ingredients, physical data, fire and explosion hazard information, health hazard information, reactivity data, spill or leak procedures, special protection information, special precautions, toxicological information, and other relevant information. MSDS's can be obtained from the manufacturer of the product. For further information on MSDS's, contact your local OSHA office.

MSDS's are used widely to determine the potential hazards exposed to an employee who is working with or near a particular product. As new information is discovered concerning the properties of a product and the effects of various levels of exposure to it, MSDS's can change. The manufacturer of a product is responsible for providing updated copies of these sheets to individuals who have requested MSDS's for that product. In order to insure that your agency does in fact have a copy of the most current MSDS sheet for reference, it is suggested that the safety program have its own mechanism for updating the agency's MSDS files on at least an annual basis.

Employees and management should receive training in the use and interpretation of the information on an MSDS; this will insure that they adequately understand the potential hazards associated a product and are aware of the necessary precautions to take when working with the product. MSDS's should be made accessible to employees at all times. Posting MSDS's in a location available to everyone and advising employees of the location insures that all employees will have access to the information. Check with your local or State OSHA representative to determine whether or not your agency is required to meet specific requirements concerning providing the information in MSDS's to employees.

## **Obtain Information from Outside Agencies**

The resources of outside agencies can be helpful in trying to determine the most appropriate way to address a safety concern, and sharing information with other agencies can be helpful to them. As mentioned earlier in this document, OSHA representatives can be of great assistance in resolving safety concerns. Other resources are also available as indicated in Section VIII of this document. Another source of information is that of input from agencies which may have encountered a similar problem; contacting an agency which has successfully dealt with the safety concern saves the resources involved in researching and devising ways to resolve the issue. For example a weights and measures jurisdiction in one State may have reduced the hazards associated with transporting a 5-gallon test measure; sharing their findings with other States with similar concerns can help those States avoid the costs and delays associated with researching the issue. Establishing and maintaining cooperation and information exchange with the NCWM, private industry, and other W & M jurisdictions can benefit everyone.

## VII) Evaluating the Effectiveness of a Program and Making Modifications

*Many policies and regulations will vary from jurisdiction to jurisdiction. It is essential that the inspector or serviceperson be aware of all safety regulations and policies in place at the inspection site and to practice the safety policies established by the inspector's or serviceperson's employer. When modifying an existing program or establishing a new program, it is necessary to verify that all State and local safety requirements as well as any safety policies within the agency are satisfied.*

Once a safety program has been established it is necessary to evaluate the effectiveness of the program to insure that the program and its policies and procedures meet the objective of maintaining a safe work environment and minimizing potential safety hazards. A safety program must be flexible enough to respond to the changing needs of the workplace environment, and if a procedure is no longer effective in minimizing a safety risk it must be modified. OSHA is the expert in analyzing the effectiveness of a safety program; check with the local or State OSHA representative for input on the effectiveness of a program.

To begin the evaluation of a program, it is first necessary to monitor what is practiced -- not what is supposed to be practiced. This can be done in several ways. Regular self-inspections are an excellent means of monitoring a safety program and of insuring that safety regulations and policies are being followed. Request input from the local or State OSHA representative and check to see if there is a hygienist employed within the agency who might evaluate the program. It may be possible to contract an industrial hygienist to evaluate the effectiveness of the safety program.

Many jurisdictions and service agencies have well established safety programs which continue to operate effectively and require few changes. Even these organizations recognize the benefits of continual evaluation of the effectiveness of the safety program. The safety programs of such organizations usually include a mechanism for providing a periodic evaluation of the operation of the program, and a mechanism for making changes to the program to respond to changes in requirements and to the dynamic workplace environment.

If the evaluation indicates the existence of a potential safety hazard, it is necessary to determine why the potential exists. If the hazard is present because an employee has failed to follow the policies and procedures established by the program, additional training or reinforcement of the policy may be needed. Attempts should be made to determine why the employee is not following the procedure and inquiries made into possible ways of correcting the problem. For example,

- Is the procedure impractical? If so, does an alternative means of accomplishing the task exist?
- If no alternatives to the procedure exist, ways must be found to encourage the employee to use the procedure.
- Can a related procedure be changed to make the safety procedure more practical and more likely to be followed by the employee?
- Is the procedure not being followed because of a lack of commitment from management (e.g., lack of resources such as proper safety equipment)? If so, ways of obtaining and demonstrating a positive commitment must be obtained from management.

- Is a lack of employee involvement in establishing the safety procedures the cause of the problem? If so, attempt to involve employees in evaluating the program and work to encourage their suggestions for improvements of the program; they are the ones working with the procedures. Ask the employee for suggestions on how the procedure could be improved to be a practical means for minimizing the safety hazard.

If the hazard is present because the policies and procedures of the safety program have not adequately addressed the problem, it is necessary to reevaluate the situation and discover a way to minimize or eliminate the risk. Can the procedure be modified to adequately address the safety concern? Would new testing equipment or personal protection equipment correct the problem? Any changes made to the policies and procedures of the safety program as a result of the evaluation and reanalysis should be included in the next revision of the safety program's documentation; until such time as the documentation is revised, a written description of the modified procedure should be provided to employees and they should also be notified verbally.

As part of the normal maintenance of a safety program, it is necessary to periodically review the policies and procedures to insure that they comply with all local, State, and Federal safety requirements, especially any new requirements which have gone into effect since the establishment of the safety program. Changes to the policy and procedures must be made to address any changes in the safety requirements, and all employees must be properly notified of the change.

Changes to a safety program may also be necessary to address any new equipment or modifications to current equipment. An evaluation should be made of the operation of the new or modified equipment to determine whether or not changes are needed in the safety procedures to adequately address any potential safety hazards.

## VIII) Resources for Maintaining an Effective Safety Program

There are many resources available for safety training or safety information which can help to maintain an effective safety program. These resources can be in the form of training to insure that proper safety procedures are known and followed or in the form of information about a product or test procedure which may prevent potential injury to an employee.

### Safety Training and/or Information Resources

Listed below are a number of resources which can provide safety training or safety information. This is not intended to be a complete list of all possible resources for safety information, rather this is a list of some of the agencies that the Task Force has worked with or obtained information from in the course of its work.

Occupational Safety and Health Administration (OSHA)  
(Check for local and State listings; Federal OSHA is located in Washington, DC)

National Safety Council  
Chicago, IL

National Institute Occupational Safety and Health (NIOSH)

American Petroleum Institute (API)  
Washington, DC

National Conference on Weights and Measures (NCWM)  
Gaithersburg, MD

National Institute of Standards and Technology (NIST)  
Gaithersburg, MD

American Industrial Hygiene Association  
Akron, OH

American Meat Institute  
Arlington, VA

In addition to these and other agencies which are not listed, local industry trade groups conduct many training seminars which may be open to W&M. For example local distributors of liquefied petroleum gas (LPG) often conduct safety training for employees; this information may be useful for weights and measures officials who inspect LPG meters. Equipment suppliers and consultants also conduct training seminars concerning the safe use of equipment and safe procedures.

Another resource for maintaining a safety program is a regular review and update of all procedures by a group within your agency (e.g., safety committee). Such a group would be familiar with your equipment, personnel, and any constraints which you have, and can provide excellent feedback about the effectiveness of your current safety practices.